

## CLAIMS

1. Apparatus for collecting solids settling at the bottom of a liquid reservoir, said apparatus comprising a hollow suction head, at least one outlet duct extending from said  
5 hollow suction head, and means for creating a suction pressure in said suction head whereby to cause settling solids beneath said suction head to pass along said at least one outlet duct for collection.
2. Apparatus as claimed in claim 1 wherein said suction head comprises a hollow  
10 body which has an open lower side defining a mouth.
3. Apparatus as claimed in claim 2 wherein said suction head includes one or more outlets for connection to said outlet duct or ducts.
- 15 4. Apparatus as claimed in any one of claims 1 to 3 wherein said means for creating a suction pressure in the suction head comprises means for introducing air into the suction head.
5. Apparatus as claimed in claim 4 wherein said means for introducing air into the  
20 suction head comprises an air diffuser located within the said suction head.
6. Apparatus as claimed in claim 5 wherein said air diffuser comprises an elongated pipe having a plurality of air outlets therein.
- 25 7. Apparatus as claimed in any one of the preceding claims wherein said suction head includes means to displace solids from the bottom of the liquid reservoir.
8. Apparatus as claimed in any one of the preceding claims and including skids for supporting said suction head assembly on the bottom of said liquid reservoir.
- 30 9. Apparatus as claimed in any one of the preceding claims and including a collector for collecting materials from said suction head.

10. Apparatus as claimed in claim 9 wherein said collector includes a housing defining a collection chamber and buoyant support means for buoyantly supporting said collection chamber.
- 5 11. Apparatus as claimed in claim 10 wherein said chamber has at least one entry port whereby liquid and entrained solids from the suction head can flow into the chamber from said at least one outlet duct for collection.
- 10 12. Apparatus as claimed in claim 11 wherein said chamber is substantially circular in cross section and including guide means in said chamber adjacent said entry port for directing liquids and entrained solids from said outlet in a generally tangential direction into said chamber.
- 15 13. Apparatus as claimed in claim 11 or claim 12 wherein said entry port is open to collect solids floating in or on the surface of the liquid.
- 20 14. Apparatus as claimed in any one of claims 11 to 13 and including an external guide member defining a throat to assist in direction liquid into the housing of the collector.
- 25 15. Apparatus as claimed in any one of claims 11 or 14 and including one or more outlet ports or openings spaced from said entry port for passage of liquid out of the chamber.
- 30 16. Apparatus as claimed in any one of claims 11 to 15 wherein said buoyant support means comprise a buoyancy member located around at least portion of the upper periphery of said housing.
17. Apparatus as claimed in claim 16 wherein said buoyancy member is hollow chamber for containing air or one or more buoyant bodies.
18. Apparatus as claimed in any one of claims 9 to 17 and including link means interconnecting said suction head and said collector, said link means permitting the

height of said collector to be adjusted relative to said suction head.

19. Apparatus as claimed in claim 18 wherein said link means comprise a pair of link arms extending substantially parallel to each other and pivotally connected at opposite  
5 ends to said suction head and said collector respectively.

20. Apparatus as claimed in any one of claims 11 to 19 and including means for assisting in guiding liquid and materials in the liquid towards the entry port of the collector.

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21. Apparatus as claimed in any one of claims 9 to 20 wherein said collector includes one or more arms for anchoring said collector or coupling said collector to a further collector.

15 22. Apparatus as claimed in any one of the preceding claims and including means for moving the apparatus in the liquid reservoir.

23. Apparatus as claimed in claim 22 wherein said moving means comprises a winch having a cable coupled directly or indirectly to said suction head.

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24. Apparatus as claimed in claim 23 and including means for reversing said winch whereby said apparatus can traverse back and forwards over the bottom of the liquid reservoir.

25 25. Apparatus as claimed in claim 24 wherein said reversing means includes stop means associated with said cable, said stop means being cooperable with one or more limit switches for causing automatic reversing of said winch.

26. A method of cleaning a liquid reservoir, said method including the steps of  
30 providing in a liquid reservoir, apparatus as defined in any one of the preceding claims, and moving said apparatus in said reservoir for collection of solids settling on the bottom of said reservoir and/or solids floating on or located adjacent the surface of liquid in said reservoir.

27. A method of cleaning a liquid reservoir wherein settling and floating solids are collected simultaneously.